Deutsche Bank
DB Research

Policy Paper
Natural resources

GET FiT in Uganda

Observations & open issues from a financial perspective

November 20, 2013

Authors
Silvia Kreibiehl
Frankfurt School-UNEP Collaborating Centre
for Climate & Sustainable Energy Finance
+49 69 154008-860
s.kreibiehl@fs.de

Sabine Miltner
+1 202 626-7035
sabine.miltner@db.com

Editor
Eric Heymann

Deutsche Bank AG
DB Research
Frankfurt am Main
Germany
E-mail: marketing.dbr@db.com
Fax: +49 69 910-31877

www.dbresearch.com

DB Research Management
Ralf Hoffmann

An estimated 17% of the global population does not have access to electricity and fossil fuels still account for more than 80% of the world's energy mix.

The GET FiT (Global Energy Transfer Feed-in Tariffs) concept was developed by Deutsche Bank in 2010. It intends to combat climate change and the lack of available energy by supporting private sector investment in capital intensive renewable generation assets in emerging and developing countries. The idea of the concept is that governments in the developed world and/or multilateral organisations support the upgrading of the existing regulatory framework in emerging economies to improve the risk profile and commercial viability of renewable energy investments from a private sector investor's perspective. The GET FiT Pilot in Uganda, initiated jointly by KfW and Deutsche Bank and officially launched in Kampala on 31 May 2013, will support approx. 125 MW of renewable energy.

There are major barriers for private sector investments in renewable energy projects due to lacking transparency, the (perceived) risk of retroactive changes to the Feed-in Tariffs (FiT) scheme as well as the limited creditworthiness of a single off-taker. KfW – supported by other donors – has spent significant time with public sector stakeholders in Uganda to increase awareness of private sector requirements. The review and standardisation of the required legal documentation have increased transparency for project sponsors and will reduce transaction costs for lenders significantly. In addition, the Government of Uganda has requested World Bank support to mitigate regulatory risk by providing Partial Risk Guarantees improving the risk profile for investors.

Additionally, the top-up of the existing FiT, which is – as the base FiT – fixed per technology (hydro, solar PV, wind, etc.), closes the remaining gap between current FiT and the levelised cost of electricity after mitigation of regulatory/off-taker risk. Our analysis shows that the required donor payments would have been close to zero, if carbon markets and the Clean Development Mechanisms had put an appropriate price on carbon emissions. Due to the carbon market failure, investment grants need to replace the economic instrument for the time being.

GET FiT has so far succeeded, with regard to private sector development activity and equity investments. Initial projects benefitting from GET FiT support are expected to start construction in early 2014 and will contribute to avoiding load shedding and/or the use of expensive, carbon intensive emergency power. To achieve private sector participation in debt financing, it will be crucial to give private sector lenders a "fair chance" to participate on their terms. We are confident that GET FiT can play a crucial role in developing Uganda's energy sector.

Table of contents

Abbreviations

AGECC	Advisory Group on Energy and Climate Change
ATI ACA	The African Trade Insurance Agency
Bn	Billion
BPS	Basis Point
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
c/kWh	USD cents / KiloWatt Hour
COD	Commercial Operation Date
DB	Deutsche Bank
DECC	Department of Energy & Climate Change
DFI	Development Finance Institutions
DFID	Department for International Development
ERA	Electricity Regulatory Authority
EUR	Euro
FiT	Feed in Tariff
FY	Financial Year
GET FiT	Global Energy Transfer Feed-in Tariffs
GDP	Gross Domestic Product
g/kWh	Grams / KiloWatt Hour
GoU	Government of Uganda
GWh	GigaWatt Hour
HFO	Heavy Fuel Oil
HPP	Hydro Power Plant
IA	Implementation Agreement
IDA	International Development Association
IFI	International Finance Institution
IPP	Independent Power Producer
IRR	Internal Rate of Return
KfW	KfW Bankengruppe
KPI	Key Performance Indicator
kWh	KiloWatt Hour
L/C	Letter of Credit
LCOE	Levelised Cost of Energy
MEMD	Ministry of Energy and Mineral Development
MW	Megawatt
NPV	Net Present Value
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
PRG	Partial Risk Guarantee
RE	Renewable Energy
REFiT	Renewable Energy Feed-in Tariff
SARI	South African Renewables Initiative
UEB	Uganda Electricity Board
UETCL	Uganda Electricity Transmission Company Limited
USD	United States Dollar
WACC	Weighted Average Cost of Capital

1. Foreword

Addressing the twin challenges of climate change and lack of access to affordable energy for the world's poorest people will require concerted government and private sector cooperation to realise massive levels of investment. An estimated 17% of the global population do not have access to electricity and fossil fuels still account for more than 80% of the world's energy mix. The global community has embraced the goal of "Sustainable Energy for All" in order to achieve universal access to modern energy services, double the global rate of improvement in energy efficiency and to double the share of renewable energy in the global energy mix. According to the IEA, these goals will require an increase in energy investments of at least USD 600 billion per year until 2030.

The creation of a stable and attractive regulatory environment in developing countries is essential for the private sector to make these investments. Unfortunately, there is often insufficient policy "Transparency, Longevity and Certainty" (TLC). To address this issue, Deutsche Bank developed the idea of "GET FiT" (Global Energy Transfer Feed-in Tariffs) in January 2010, following a request from the Advisory Group on Energy and Climate Change (AGECC) of the Secretary General of the United Nations, to present new concepts for promoting renewable energy investments in developing countries. Though many developing countries have created feed-in tariffs, their design and effectiveness vary widely and some countries lack the financial strength, grid infrastructure and/or regulatory frameworks to realise the levels of investment needed.

The GET FiT idea is for governments in the developed world to support the upgrading of the existing regulatory framework in emerging economies and to improve the risk profile and commercial viability of renewable energy investments. Jointly with KfW, Deutsche Bank designed a program to pilot this concept in Uganda. The pilot was launched with the support of the German, Norwegian, UK and Ugandan governments as well as the World Bank. Project developers responded to the Request for Proposals in order to receive the premium payments from the GET FiT program.

Energy scarcity is a megaproblem, also in Uganda, the GET FiT pilot country – but the megasolutions like the proposed 600 MW Karuma hydro power plant are far away. We do not believe that the megasolutions are the only ones to address the megaproblem. GET FiT in Uganda supports medium scale RE generation capacity. We believe that medium scale RE is in a good position to help increase electricity supply, in particular in remote areas. GET FiT however is not a cure-all. Efforts to improve energy efficiency, upgrade transmission systems and expand the grids into remote areas need to be made to resolve the megaproblem.

Uganda has been at the forefront of energy sector reforms, including unbundling and privatisation. It has also been at the forefront when it had implemented the REFiT scheme as one of the first countries in Africa. International support was required to kickstart the realisation of many projects under the FiT scheme. 14 projects have applied for GET FiT support in a first round of Call for Proposals, launched in April 2013. All projects have been developed by private sector players and have already secured equity investments from strategic and financial private sector investors. This is a huge success.

Going forward the Ugandan stakeholders will remain in the driver seat and we hope that donors can decrease the international support over time. To ensure sustainability, the Government of Uganda has agreed to adjust FiT levels over time to reduce dependency from donor money. This is possible with decreasing costs for RE and can support Uganda on its least cost development path in the energy sector. Moreover, domestic capital market deepening can take place over time, especially if commercial banks can replace debt financing from

development finance institutions. For the time being however, the focus has been on rapid realisation of projects to avoid load shedding ahead of the completion of Karuma.

There is still a long way to go and we need to continue to pave the way for new Independent Power Producers. Whether GET FiT will become a success in the long term now depends very much on transparency of government action. Investors will only be able to state that this was a success when their investment has been amortized over the projects' 20 year-lifetime. The GET FiT concept marks a new approach of donor support and certainly needs to be finetuned, taking lessons learnt into account. We aim to contribute to this process by shedding some light on financing related issues of GET FiT.

We would like to thank KfW for an amazing cooperation during the design phase of the GET FiT pilot and the preparation of the implementation. KfW has once again proved that they are open for innovative approaches and understand and accept private sector requirements. We also very much appreciated the cooperation and early involvement of Benon Mutambi, CEO of ERA, and the former Ambassador of Uganda to Germany HE Butagira. We were excited to assist you in bringing this concept to Uganda. Thanks also to the donors supporting this innovative concept and the Ugandan government.

We wish the GET FiT pilot success in realizing 125 MW of clean and reliable energy. We hope that this pilot will only be Phase 1 and GET FiT can be applied in other countries and regions to scale up the deployment of renewable energy in the developing world.

Silvia Kreibiehl* Sabine Miltner**

*Silvia Kreibiehl is the Head of the Frankfurt School-UNEP Collaborating Centre for Climate & Sustainable Energy Finance. Before joining the Centre in January 2013 she was the Lead Analyst for GET FiT at Deutsche Bank.

** Sabine Miltner is Head of Group Sustainability at Deutsche Bank AG.

2. Introduction

This paper aims at giving an overview about the GET FiT concept and its implementation as a pilot in Uganda. Following the description of the instruments chosen for the GET FiT pilot, as well as the rationale of the concept, we will present GET FiT's targeted impact. Given the innovative nature of the concept, the last chapter explains critical aspects from a financing perspective. We would like to shed some light on financing related issues which we have observed over the recent months, as well as aspects, which require consideration, when expanding GET FiT into other countries or a phase 2 in Uganda.

3. The GET FiT concept

GET FiT – Global Energy Transfer Feed-in Tariffs – was developed in January 2010 by experts of Deutsche Bank Climate Change Advisors. The Advisory Group on Energy and Climate Change (AGECC) of the Secretary General of the United Nations had asked the latter to present new concepts for promoting RE investments in developing regions.

The objective of GET FiT is to combat climate change and the lack of available energy by supporting private sector investment in capital intensive renewable energy sources in emerging and developing countries.

In light of budget constraints, as well as a lack of investor confidence in the governments of developing countries, GET FiT accepts that international support will be required to scale up RE generation capacities. The concept combines mechanisms and structures of the public, as well as the private sector, and creates an innovative public-public-private partnership:

— The developing country government and/or electricity regulator (the public sector of the developing world) supports renewable energy projects by implementing appropriate regulatory schemes for renewable energy generation. Fixed payments for generated electricity, as well as priority treatment/feed-in of renewable energy, are crucial for facilitating private sector investments.

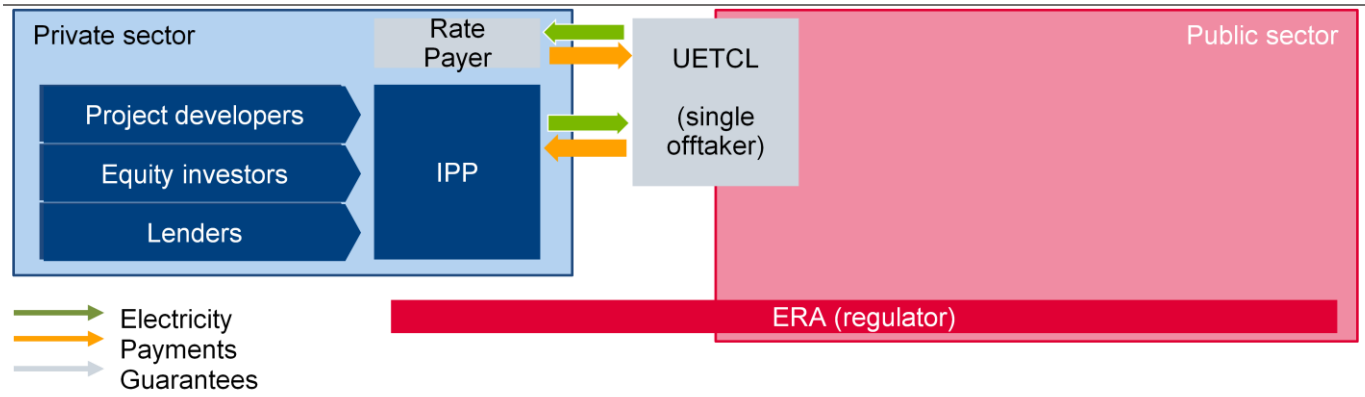
— The public sector of the developed world "upgrades" the existing regulatory environment in the developing world. It creates transparency, longevity and certainty for private sector investors and consequently mitigates actual and perceived risks, which the action of the developing country government alone could not accomplish. In order to achieve this, they should absorb the political, regulatory and credit risk in relation to the single off-taker of electricity (counterparty risk guarantee). Bilateral and multilateral development partners might also offer financial support for feed-in tariff payments (burden sharing with the developing country).

— Building on the improved risk profile and commercial viability of renewable energy investments, the private sector is expected to deploy both, equity and debt capital. It absorbs all manageable risks, in particular technological and operational risk.

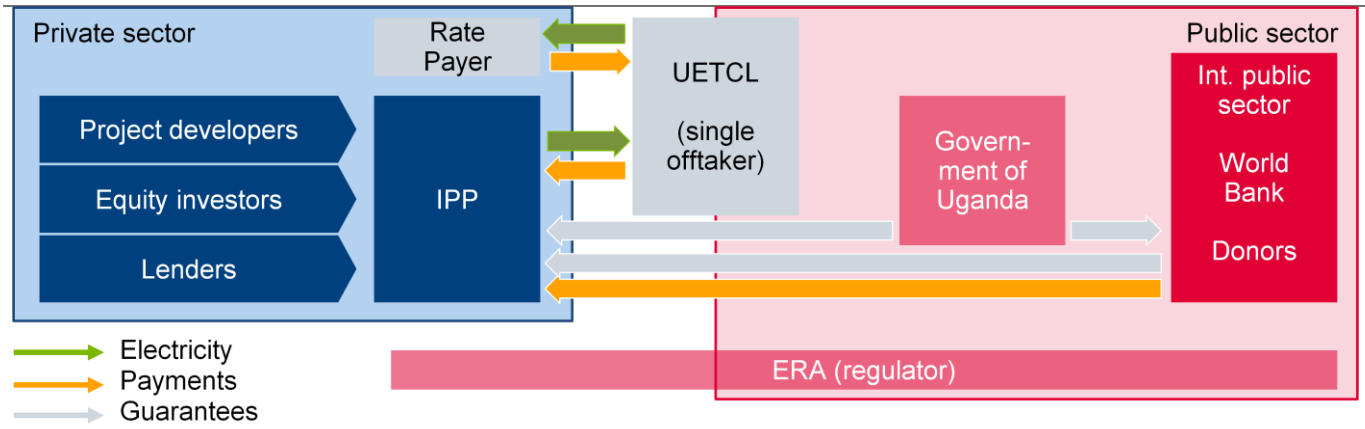
The public sector financing mechanisms addresses key issues, that generally inhibit more private investment in renewable energy in developing countries – in particular the lack of creditworthy off-taker structures, significant (perceived) political risk as well as the lack of financial viability of investments due to low feed-in tariffs. GET FiT targets a fair risk allocation between the public and the private sector and allocates risks to the party, which is best positioned to manage it. This makes GET FiT also a cost efficient support mechanism.

The creation of a stable regulatory environment in developing countries („enabling environment“), rather than project-based support for individual developers, increases transparency and visibility for the private sector and reduces opportunity costs in new markets.

Situation before GET FiT



GET FiT Concept



Note: Application of the GET FiT concept in Uganda

4. The GET FiT pilot in Uganda

A GET FiT pilot was officially launched 31 May 2013 in Kampala. The KfW Bankengruppe (KfW) and Deutsche Bank had decided in July 2011 to prepare a joint feasibility study for a GET FiT pilot in Uganda. This feasibility study was presented in October 2012. A first stakeholder meeting took place in January 2012.

Cornerstones of the GET FiT pilot in Uganda:

— Supported projects: Additional 125 megawatt (MW) of renewable energy capacity in 10-15 projects (project size between 5 and 20 MW). Focus on biomass/bagasse (primarily co-generation from sugar production) and river hydro.

— Public support instruments: Strong results-orientation with a combination of FiT top up (cash payment) and guarantees mitigating risks, which cannot be managed by the private sector.

— FiT top-up: 2USD cent per kilowatt hour (c/kWh) for river hydro and 1USDc/kWh for biomass/bagasse up to 60%/40% capacity factors. The Net Present Value (NPV) equivalent of a 20 years FiT top-up will be paid as a

combination of a grant on commercial operation date (i.e. after successful construction) and a 5 years FiT top up. The government of Uganda has committed to increase base FiTs in the long term to replace donor support.

— Guarantees: The Government of Uganda has officially requested the World Bank to explore the use of a Partial Risk Guarantee (PRG) mechanism for projects benefitting from GET FiT support. The PRG could be combined with the letter of credits from a commercial bank. This will provide greater certainty over timely receipt of payments, that are due from the Uganda Electricity and Transmission Company Limited (UETCL), in line with the Power Purchase Agreement (PPA) and smoothen debt repayments in case of payment delays by UETCL. In addition, private developers will also be able to avail of further cover from the World Bank for other obligations of the government (including, for instance, guarantees on termination). Such further guarantees would be direct to lenders to projects.

— Donors: Department of Energy & Climate Change (DECC), UK Department for International Development (DFID), the Governments of Norway and Germany as well as most recently the Africa Infrastructure Trust Fund of the European Commission, have committed donor money to contribute to the approx. 90USDm required to finance the feed-in tariff top up.

— Process: Project sponsors/developers can apply for GET FiT financial support as well as the guarantees once their projects have reached an advanced development phase and as long as they have not signed a PPA with UETCL. KfW on behalf of ERA organised and will continue to organise requests for proposals. Following an expert review of economic, technical and socio-ecological aspects, an independent investment committee decides upon the financial support. The World Bank decision-making process for the PRG guarantee takes place in parallel.

— Timeline: First Round of Request for Proposals launched on March 25th, 2013. Closing date for applications was April 24th, 2013. The investment committee decided upon support for individual project in July and September 2013. A second round will be launched late 2013. All GET FiT projects are expected to be on-grid by the end of 2016 at the latest. First movers are expected to start construction in early 2014.

5. Background information on Uganda and the Ugandan electricity sector

The East African region is characterised by extreme energy poverty. On average more than 90% of primary energy demand in the region is covered through biomass (i.e. primarily firewood and charcoal for cooking, as well as kerosene and paraffin for lighting). Overall, less than 3% of the rural population and less than 32% of the urban population have access to the national electricity grid. The use of unsustainable biomass results in environmental damage (like among other things deforestation) as well as health impacts (caused by indoor cooking with charcoal) and social impacts, as these sources of energy are relatively expensive for local consumers. Based on a comparison of unit price levels for energy delivered, consumers of traditional biomass thus end up spending a significantly larger energy bill than consumers who have access to electricity (up to 20% of their monthly income).

Uganda is one of the poorest countries in the world, in terms of GDP on a per capita basis. The country is projected to enter a period of rapid economic growth, partly due to the imminent commencement of oil extraction, and also as a result of increased growth across Africa, especially in East Africa. Demand for electricity is projected to increase significantly as a result of the needs of industrial and domestic consumers. The current growth is estimated at

7-9%/year, or approx. 50MW in annual peak demand in the base case scenario of Government of Uganda (GoU)'s Power Sector Investment Plan. Despite a low electrification rate (<7% nationally), there has been considerable loadshedding as a result of lack of sufficient generation until recently, which especially caused problems for households and key industries. Even including the new 250MW Bujagali hydro power plant, the base case peak demand growth scenario shows a significant supply shortage from 2015 onwards. The GoU estimates suggest that approximately USD 9.2bn in funding is needed between 2009 and 2030 to accommodate rising electricity demand in order to achieve just below 30% access to electricity. This can only be accomplished with more prominent private sector involvement. This is recognised by the GoU and the Electricity Regulatory Authority (ERA). As most of the large power plant projects which are currently in the planning, are not to be commissioned before 2018, there is an urgent need to mobilise additional capacity with shorter lead times to prevent a significant supply gap that is forecasted to emerge in 2014-15.

The 1999 Electricity Act stipulates three key energy policy goals for Uganda: to enhance both, the economic and the environmental sustainability of the sector; to foster energy security (in terms of security of supply); and to open the sector for private investment, especially in generation and distribution. One of the main measures taken by the Electricity Act to achieve these objectives has been the unbundling of the Uganda Electricity Board (UEB) into its generation, transmission and distribution components (completed in 2001). Following that, the generation and distribution businesses have been leased to private operators on long-term concessions while transmission has remained a public function with the Uganda Electricity Transmission Company Limited (UETCL) operating as a single-buyer. The Electricity Act also created a national regulator – the ERA – that sets standards and tariffs for the power sector. In addition, ERA is responsible for issuing licenses and permits, approving power purchase agreements (PPAs), and promoting codes of conduct and best practice industry standards. The National Energy Policy of 2002 reinforced these comprehensive sector reforms, and reemphasised in particular the importance of attracting private investment into the Ugandan energy sector. The National Energy Policy also defined additional strategies to attract more private capital and entrepreneurs into the sector, and called for using incentives, such as loans on concessionary terms, government guarantees, and "smart subsidies" (grants) for infrastructure investments.

The Renewable Energy Policy of 2007 highlighted the significant role of especially small RE. Noting that the potential of RE could exceed 5,300MW in Uganda, the RE Policy in particular points to the potential of small hydropower, solar technologies, biomass (e.g. co-generation), biofuels (as a byproduct from sugar production), and waste-to-energy projects. Building on that potential, the RE Policy formulates an ambitious policy target: Until 2017, Uganda is supposed to increase the use of modern RE as a share of total energy consumption from 4% to 61%, primarily driven by large-scale hydropower projects. To achieve this target, the RE Policy introduced a diverse set of measures, including innovative financing mechanisms for RE such as public-private partnerships and targeted "smart" subsidies. The most significant instrument, the RE Policy envisioned for promoting especially small renewable energy generation projects, was the establishment of a Renewable Energy Feed-in Tariff (REFiT) Policy. A conscious policy decision was taken to keep the FiT relatively low in order to minimize the impact on end-user tariffs, and to foster growth of small renewable generation projects instead through "smart" subsidies and other tariff-neutral financing mechanisms.

There have been initial weaknesses in the implementation of the Government's Renewable Energy Policy and especially the REFiT program. For instance, ERA and UETCL (single buyer) failed to develop the necessary implementation

modalities (such as a standardised PPA) that would have facilitated the application of the REFiT policy. In the initial REFiT phase in 2007, UETCL continued to negotiate tariffs on a project-by-project basis with individual developers, which resulted in long delays as well as widely differing approved tariffs. These shortcomings could be fixed in the second phase in 2011, as UECTL was encouraged to apply REFiT policy and tariff levels. The overall tariff levels were also slightly increased, compared to the initial ones. Another problem was the poor liquidity situation in the financial year (FY) 2011-12 of the single buyer UECTL due to local currency depreciation, high oil import prices for the diesel/Heavy Fuel Oil (HFO) power plants and depletion of World Bank financing – resulting in economic risks. The shortfall had to be paid in subsidies by the GoU which was forced to spend 7% of the national budget to stabilise the retail electricity tariff. To address this issue, ERA raised consumer tariffs. End customer tariffs currently come in at approx. 525UGX or 20USD cent per kWh.

6. GET FiT instrument 1: Guarantees covering political, regulatory and offtaker risk

Lacking transparency, the risk of retroactive changes to the FiT scheme as well as the creditworthiness of the single off-taker are major barriers for private sector investments in renewable energy projects. Compared to other investments in developing countries and even investments in fossil fuel power projects, RE projects have a higher exposure due to their capital intensity and resulting high level of fixed costs.

FiTs are currently being fixed at levels allowing investors only low/moderate returns, compared to entrepreneurial investments, i.e. pricing in the benefit of stable returns of an infrastructure project. Therefore, investors cannot absorb a significant risk of potentially reduced revenue streams, in particular taking into account that they only have this single source of revenues. Delayed payments by the off-taker can also have a significant negative impact on the IPPs' ability to generate sufficient cash flows for debt service.

The regulatory and off-taker risk include ability and willingness to pay. It is (perceivably) higher, the higher the incremental costs of renewables are. This is primarily driven by the risk that the regulator and/or off-taker feels that he entered into an unfavourable deal and locked in high generation costs.

To support investments, the Government of Uganda has therefore requested World Bank support to mitigate regulatory risk for investors by providing Partial Risk Guarantees.

In the context of GET FiT and to understand the risk mitigation instruments, the current contract structure and risk allocation needs to be taken into account. IPPs in Uganda enter into a PPA with the UETCL and an Implementation Agreement (IA) with the GoU. The PPA defines terms and conditions for grid access, priority feed-in of electricity and the commitment of UETCL to buy electricity at the FiT level determined by ERA. The PPA defines that in case of non-payment by UETCL for a certain period of time, the IPP has the right to terminate the PPA and to receive a termination payment. The IA defines the commitments of GoU in particularly backing the liabilities, i.e. if the IPP terminates the PPA due to non-payment by UETCL the GoU guarantees the termination payment[1] (as it is unlikely that UETCL does not want to pay the FiT but is willing to pay the termination payment). While creditworthiness of GoU is likely to remain stronger than the one of UETCL, investors might still face issues related to a claim against a government.

[1] This applies to PPAs for projects > 10 MW. We understand that negotiations with UETCL and GoU are ongoing to ensure the same for < 10 MW projects.

How does a PRG scheme work in detail? The partial risk guarantee is primarily a liquidity support. The World Bank cooperates with a local commercial bank, which will provide letters of credit (L/C) to the investors in the projects. In case of a non-payment (in time) by UETCL, the investor can draw the L/C. UETCL is then obliged to pay back the amount to the commercial bank, including interest within a certain period, e.g. 6 or 12 months. In case UETCL does not repay the outstanding amount to the commercial bank, the latter has the right to call the partial risk guarantee. Once this has happened, Uganda would be in default with the World Bank. The reason for "delaying" the default by involving a commercial bank L/C structure is to offer time to resolve the conflict, potentially with World Bank involvement and to smoothen debt repayments in case of "minor" payment delays, e.g. triggered by liquidity bottlenecks of UETCL. In case of a default and ongoing non-payment by UETCL the liquidity guarantee "only" guarantees the payments in the defined period of 6 or 12 months. In case lenders feel uncomfortable with this limited guarantee volume, PRG can also provide termination payment guarantees, i.e. guarantee the claim against the GoU as described above. This would, however, increase guarantee fees to be paid by the IPP.

For any PRG schemes, the World Bank requires an indemnity agreement with the host government. The guarantee volume reduces Uganda International Development Association (IDA) envelope with the World Bank, however, not by the full amount but by only 25%.

We understand that guarantees will only cover debt investments. Going forward we do not see any reason why equity investments should be excluded. Even with the current focus we see a significant co-benefit of the lenders insurance to equity investors taking into account the "default-avoidance-approach" of the World Bank. The gap for equity investors only exists in the later years when debt is fully repaid.

Partial risk guarantees do not provide full risk coverage but definitively a significant share. In case of a combination of liquidity guarantee with a termination guarantee, we assume that up to 80-85% of the investment could be covered, i.e. in the worst case regulatory scenario – in which Uganda would accept the consequences of a World Bank default – the loss for a lender would not exceed 15%.

Additionally, for World Bank guarantees a favourable regulatory treatment is applied if lenders are regulated according to the Basel framework. The 85% portion covered by the World Bank would be weighted with 0% risk, significantly reducing the financing bank's risk weighted assets. Risk weighted assets are a measure for a bank's required capital. As capital of banks is a scarce – and expensive – resource, a smaller use of capital leads to lower loan margins (compared to a loan in the same amount with no collateral).

We understand that the World Bank will negotiate guarantee packages with project developers/sponsors on a project-by-project basis taking into account the lender's requirements and the level of additionality. This is a significant difference from the GET FiT top-up scheme. Transparency with regard to the availability of the World Bank instruments will have to develop over the next months. We understand payments from the L/C structure for the liquidity support being available on first demand offering a high level of flexibility and ability to "smooth" payments by UETCL. Terms and conditions, including pre-requisites for a termination guarantee payment, will need to be assessed soon.

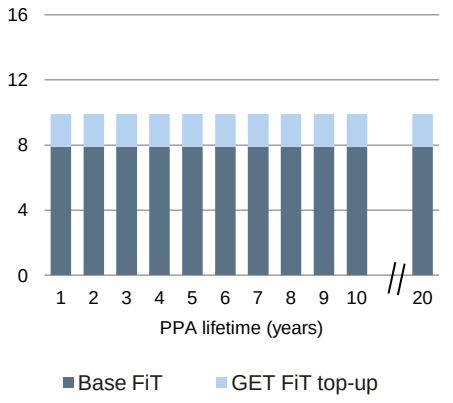
The World Bank has been involved in the discussion around the GET FiT concept as well as the implementation of a GET FiT pilot in Uganda from the very beginning on recognising the power of the World Bank's instruments for medium-scale projects. While their leverage and ability to avoid a case of default is certainly outstanding as well as pricing of the guarantee being favourable,

comparable risk guarantees could also be provided by other institutions. Project developers and investors are not restricted to cooperation with the World Bank.

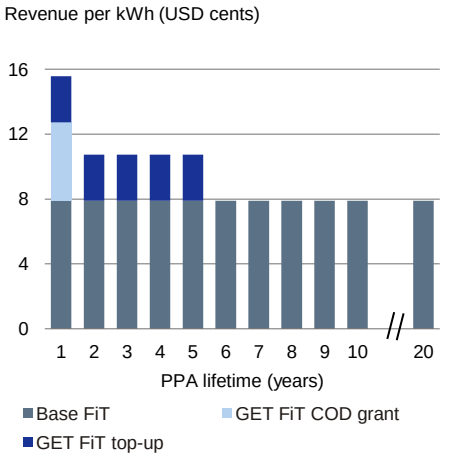
We understand that a liquidity support mechanism has been put in place by GoU already in 2011 after a review of progress made after the implementation of the REFIT regulation to address the risk for investors relating to credit-worthiness of UETCL. With trust in the Ugandan government to be motivated to resolve issues with UETCL after the 6 months period being limited but also against the background of still lacking financial viability of investments at base FiT level the instruments did not result in the targeted increase of installed generation capacity in IPP structures.

7. GET FiT instrument 2: FiT top-up

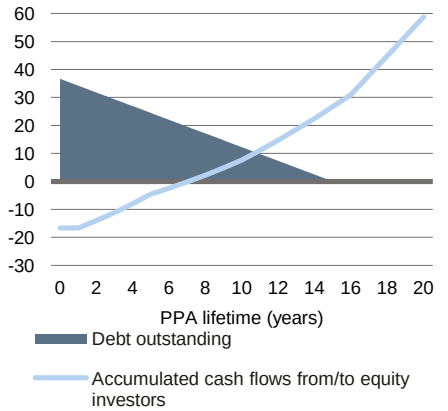
GET FiT base case: 20 year FIT top-up



GET FiT pilot case: Frontloaded FiT top-up payments (COD grant + 5 yrs top-up)



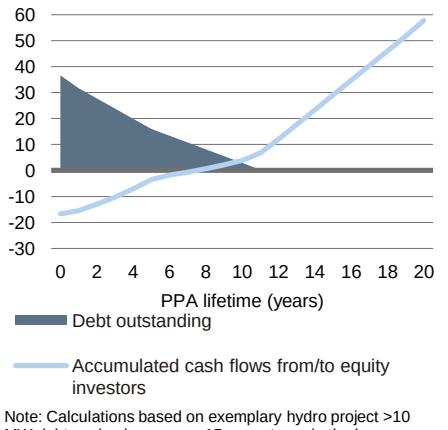
Debt and Equity payback curve



Note: Calculations based on exemplary hydro project >10 MW debt payback assumes 15 years tenor in the base case and a 12 year tenor with higher payback in the initial five years in the second scenario. Initial debt/equity split of 70/30.

Source: own calculations: Kreibiehl, Miltner

Debt and Equity payback curve



Note: Calculations based on exemplary hydro project >10 MW debt payback assumes 15 years tenor in the base case and a 12 year tenor with higher payback in the initial five years in the second scenario. Initial debt/equity split of 70/30.

Source: own calculations: Kreibiehl, Miltner

The top-up of the existing feed-in tariff closes the remaining gap between current FiT and the levelised cost of electricity after mitigation of regulatory/off-taker risk, i.e. Levelised Cost of Energy (LCOE) based on reduced risk margins and consequently financing costs. The top-up has been fixed per technology

and will – as the base FiT – not vary from project to project. The top-up will, however, not be paid over the full lifetime of the project but rather in a combination of a grant at the time of commercial operation date, i.e. after successful construction, and a FiT paid over a period of 5 years. The reason for this "frontloading" of revenues is threefold: 1) Donors prefer to disburse committed funds within a reasonable timeframe rather than park them over up to 20 years, 2) given higher financing costs of projects compared to the one of donors a frontloading will reduce overall financing costs and 3) a frontloading can at least partially address the lack of availability of long-term funding.

We believe that these aspects overcompensate for the slightly reduced level of results-orientation. The base FiT payment remains the major source of revenues for the IPP and will be paid over 20 years. The payment of 50% of frontloaded subsidies only after completion of construction work and grid connection of the plants and the remainder over the five initial years of operation still represents a strong results operation. We do not believe that the frontloading of subsidies reduces the motivation of project sponsors to properly run a project over 20 years but rather represent a major step forward compared to the common approach of construction grants.

The charts highlight the effect of the frontloading of FiT top-up payments. Cash flow and consequently debt service is higher in the initial years allowing projects to repay debt more quickly without reducing the equity IRR. It would also allow crowding in lenders with a limited track record and ability for long-term finance by offering them a participation in a senior debt tranche which could be repaid within 5 years after COD.

The equivalent 5 years FiT will be calculated on a NPV basis and this NPV being based on the projects-based discount factor (not the discount factor of the donors) the frontloading does not imply an increase of project profitability. While the NPV of payments to the project based on the projects weighted average costs of capital, the net present value of donor payments based on a discount rate of 2% (which is already above current low risk-free interest rate levels) comes in 40% lower in the case of the hydro project the chart calculations are based on.

We understand that the final payment procedures and prerequisites for the payments will have to be finalised but we are confident that KfW will go for a balanced approach.

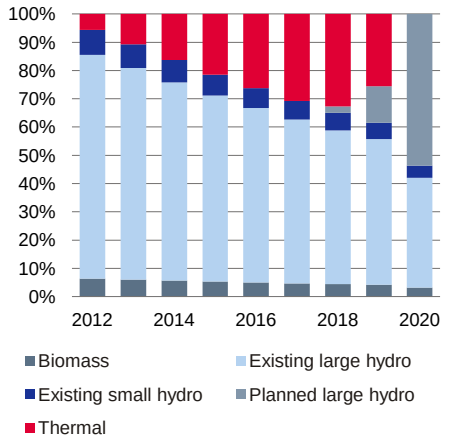
8. GET FiT instrument 3: Technical assistance

KfW – supported by other donors – have spent significant time with public sector stakeholders in Uganda to increase awareness for and knowledge about private sector requirements. While these activities have to a major extent already started years ahead of GET FiT, investors will benefit tremendously from the related developments.

In particular the review and standardisation of the PPA and the IA have provided a substantially increased transparency for project sponsors and will reduce transaction costs for lenders significantly. There have been disagreements over some key provisions of the standardized PPA templates offered by UETCL (with approval from ERA), specifically: i) provisions regarding deemed energy ii) formulation of appropriate termination clauses; iii) provisions regarding contract arbitration. All of these issues were successfully addressed in a dialogue between KfW, MEMD, ERA and UETCL. We are confident that the PPA and IA will be bankable and will reflect a well-balanced approach.

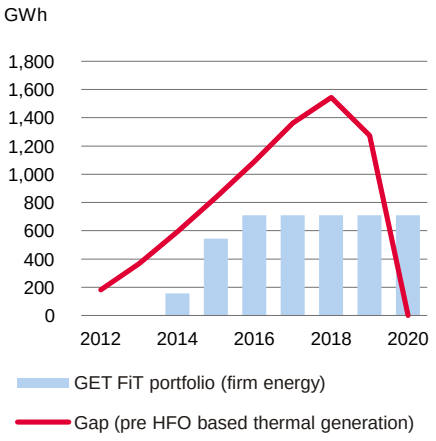
This example is only one to highlight the importance and impact of technical assistance as an instrument of non-financial support for project sponsors. DFIs are in a unique position to support the development of a private sector friendly

Generation mix excl. GET FiT



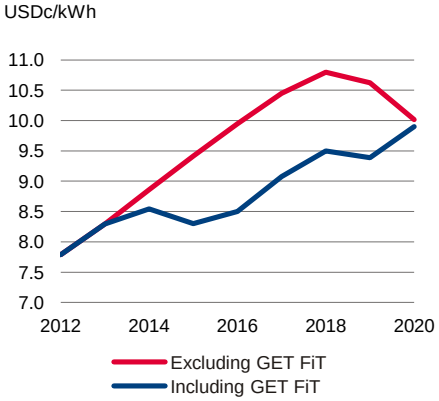
Source: own calculations: Kreibiehl, Miltner, based on power sector investment plan

Impact of GET FiT portfolio



Source: own calculations: Kreibiehl, Miltner, based on power sector investment plan

Average Generation Costs



Source: own calculations: Kreibiehl, Miltner, based on power sector investment plan

investment climate if they understand private sector requirements on the one hand and enjoy a reputation of an unbiased consultant on the other hand.

9. Impact of GET FiT 1: Energy sector perspective

Uganda's energy sector heavily depends on large hydro power plants. With the Bujagali large hydro power project, being connected to the grid, Uganda was able to reduce load-shedding and thermal emergency power production significantly. However, assuming an only moderate growth in electricity demand, Uganda will soon face energy scarcity again, with an additional large-scale hydro power plant (Karuma Falls), requiring at least five more years of project development and construction. The analysis shown aside is based on Uganda's power sector investment plan which has been published in 2011.

As project developers indicated that no medium scale generation capacity can be financed at current FiT levels, only large-scale government initiated projects are expected to be built in a scenario without GET FiT. The left chart on energy generation mix (firm energy) shows the expected increasing dependency from thermal emergency power until 2018, the planned commercial operation date of Karuma Falls. Applying the approach, chosen in the power sector investment plan, to derive electricity supply in Gigawatt Hours (GWh) from installed generation capacity, the red line in the chart on the left shows the gap which needs to be closed by thermal emergency power. The blue bars indicate the output expected to be generated by the GET FiT project portfolio. The GET FiT figures are based on preliminary assumptions for the GET FiT portfolio and will need to be verified and adjusted once the GET FiT support has been allocated to concrete projects. Projects participating in the GET FiT pilot are expected to be in a position to nearly close the gap in 2016. Assuming a learning curve effect for medium scale RE, we are confident that the increasing gap in 2017/2018 can be closed by further RE generation capacity not being supported by the GET FiT pilot.

Given the low electrification rate, the strong government and donor focus on an accelerated electrification, as well as the ability of the large hydro power plants to act as balancing power provider, concerns with regard to a potential over-supply of electricity are limited. However, the effect of priority feed-in of RE versus the ability to manage variable supply by thermal emergency power generators need to be assessed. This might affect the average generation costs.

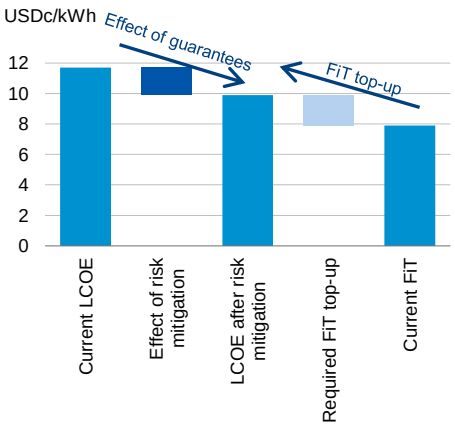
The chart alongside shows the average generation costs in the Ugandan grid based on firm energy output. Excluding GET FiT (red line) the costs increase steadily until 2018 due to the increasing component of thermal emergency power and will stabilise thereafter around 10 USDc/kWh (plus inflation adjustment). The GET FiT portfolio is included in the below calculation at base FiT tariffs, i.e. excluding the agreed donor support. Including the GET FiT portfolio average generation costs will develop more stable until 2016, when all GET FiT projects are assumed to become connected to the grid.

Analyses show that GET FiT is more of a general energy sector initiative rather than a climate initiative. For the Government of Uganda the effect of a reliable and affordable energy supply is much more important than the abatement effect. We expect any additional generation capacity to trigger incremental cost over the status-quo and the incremental cost of medium scale RE, not being higher or even cheaper than other options. Economic viability of the GET FiT projects is consequently given. We therefore believe that the chosen approach of an initial climate finance-driven support and a mid-term adjustment of base FiTs is appropriate.

Besides the impact on generation mix and average generation mix GET FiT is expected to result in a decent learning curve effect for medium scale RE in Uganda, bringing down the levelised generation costs of RE. Besides the impact on the developer community and construction stakeholders, we hope that also financial institutions will benefit from the increased number of realised projects.

10. Impact of GET FiT 2: Smart risk allocation and efficient use of donor money

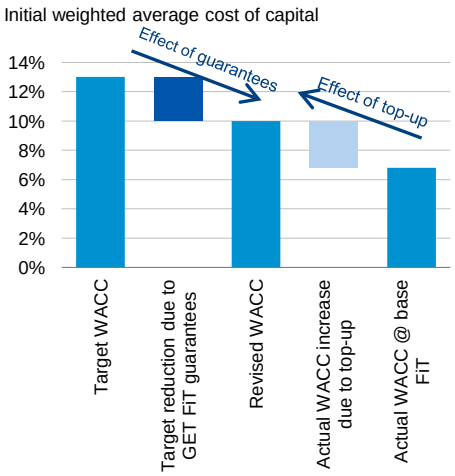
Impact on LCOE



The charts show how GET FiT closes the gap between current FiT levels and current levelised cost of electricity. The example is based on a 10MW hydro project and average investment and operating cost assumptions. In the pre-GET FiT scenario we have assumed an average cost of capital of 13% which appears reasonable against the background of the risk profile and limited track record of IPPs in Uganda.

Rather than closing the gap in one step with financial grants, GET FiT applies risk mitigation instruments to reduce the LCOE in a first step. We assume that initial average cost of capital will come down to 10% in case of guarantees being provided by the World Bank. In our example the allocation of political, regulatory and offtaker risk to the public sector reduces the gap to existing FiTs to approx. 50%. Only the reminder needs to be covered by cash payments, ideally results-based as a FiT top-up.

Impact on implied initial WACC



The second chart shows the impact of the instruments on average initial weighted costs of capital, i.e. the maximum costs of capital, which can be charged to keep the business model at a financially viable level. Investors/financers will not deploy capital below their hurdle rates. In the pre-GET FiT scenario the maximum affordable cost of capital came in at 6%, significantly below the hurdle rate of 13%. No projects could be realised at these FiT levels. Assuming the availability of guarantees the hurdle rate comes down to 10%, i.e. the cash payments “only” have to bridge the gap between the 6% and 10% Weighted Average Cost of Capital (WACC).

It is crucial to understand that GET FiT does not aim to increase investor returns but to increase project profitability to a level where a project becomes financially viable and consequently to allow investors and financers to deploy capital.

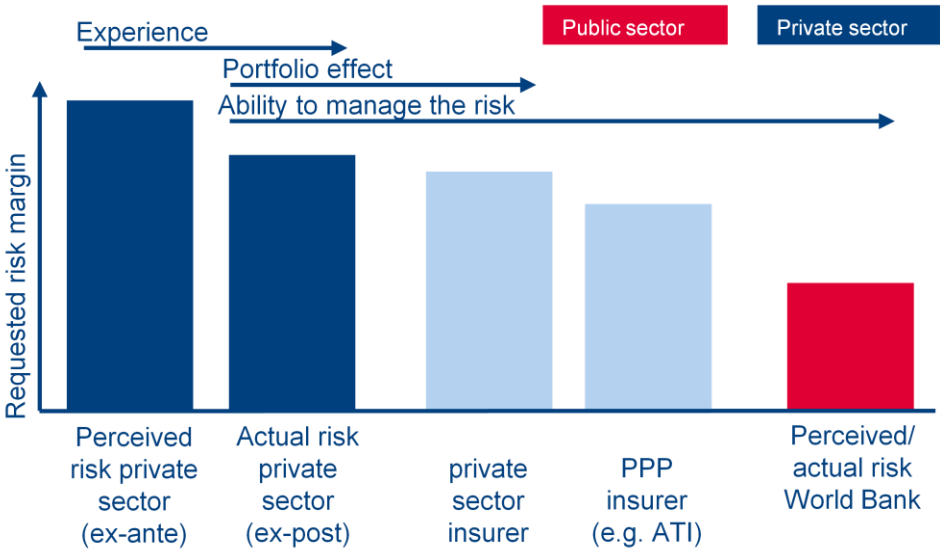
The cost efficiency of the combination of the guarantees with top-up payments results from the different pricing of risks. Risks are priced on the perceived risk, i.e. the investor/financer will determine the total costs of capital based on his refinancing costs or “risk-free rates” plus a risk margin. In new markets and/or technologies the perceived risk might significantly exceed the actual risk with investors “preferring” business-as-usual over innovative financing. However, the actual risk can only be calculated ex-post, based on average default rates in a portfolio.

With bi- and multi-national development financial institutions being more familiar with developing countries, their perceived risk and consequently risk margins will most likely come in below that of private sector investors and financers.

However, we believe that there is also a difference in actual risk for the private versus the public sector. Risk pricing is significantly related to the manageability of risk. Small IPPs with a limited share in the overall generation capacity will only have a limited leverage in case the utility as single off-taker stops, reduces or delays FiT payments. The host government is, however, strongly dependent on public sector stakeholders/donors, in particular the World Bank. These could stop donor payments, freeze debt commitments or reject the issuance of additional guarantees to facilitate required investments in case of a default. Guarantees by public sector stakeholders are therefore often described as

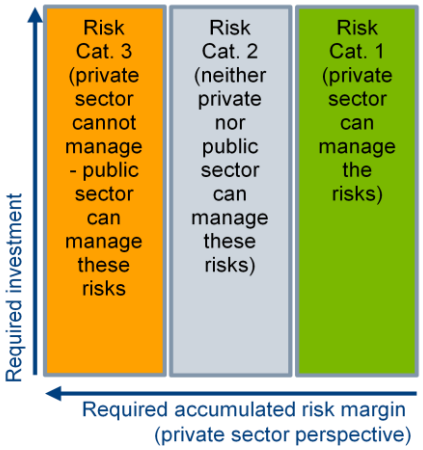
instruments to avoid the case of default, rather than being only an insurance against political and regulatory risk.

Secondly, to a lower extent the impact of portfolio diversification and familiarity with markets for a guarantor will increase actual/perceived risk. This would for example apply for guarantors like ATI ACA, the African Trade Insurance Agency. We, however, do not believe that their impact is as strong as the World Bank's. As the World Bank requires a back-to-back commitment from the host government, which might not be achievable in all countries, insurance by ATI or similar agencies might be the best possible option. The same applies for pure private insurance companies, which would at least benefit from the portfolio diversification and higher level of professionalism.



In our view this cost efficiency does not exist for risks that can be equally managed by the private and public sector (e.g. hydrological risk) or can be better managed by the private sector (e.g. O&M and technical risks).

Vertical vs horizontal slicing: By demanding a smart risk allocation the GET FiT concept targets a vertical rather than horizontal slicing. For the purpose of our analysis we assume a market with a homogeneous investor group.



We assume that any project can on the one hand be characterised by the major risk categories it is exposed to and on the other hand its capital structure. For the purpose of illustration we divide the risks into three categories: 1) risks that can be managed by the private sector (e.g. operational risks), 2) risks that can neither be managed by the private nor the public sector (e.g. hydrological risks or currency risk) and 3) risks that cannot be managed by the private sector but can be managed by the public sector (e.g. regulatory risk). We price those risks from a private sector perspective. The accumulated risk margin of an allocation of the risks is shown on the x axis of our chart. As described above we believe that an allocation of risks belonging to the third category, the public sector, is cost-efficient and an allocation of risks belonging to the second category will have no impact on overall "costs of risk". The y axis marks the total investment volume, i.e. financing requirements which can again be covered by public and/or private sector investors.

Assuming no public support the revenues per kWh need to come in at a level taking into account the total risk margin as priced by the private sector to allow them to deploy debt and equity capital.

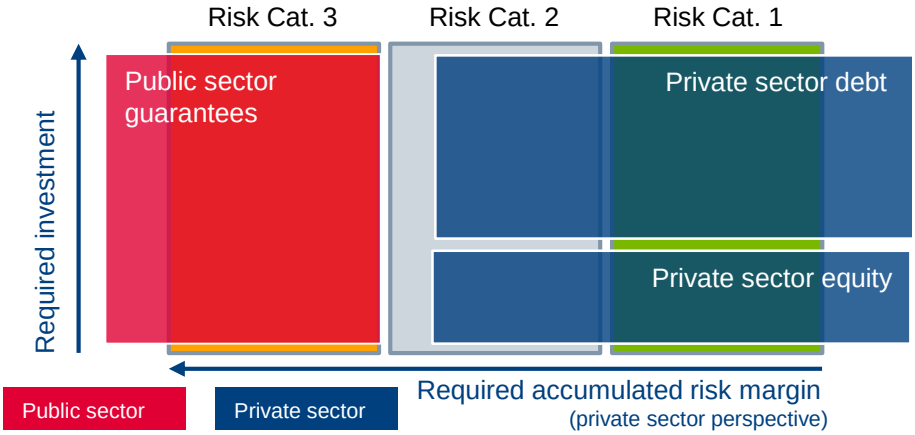
As the market is not perfect (particularly in developing countries) there, however, might not be high risk, long tenor and high return capital available. In

this case no projects can be realised even if an extremely high FiT would be paid.

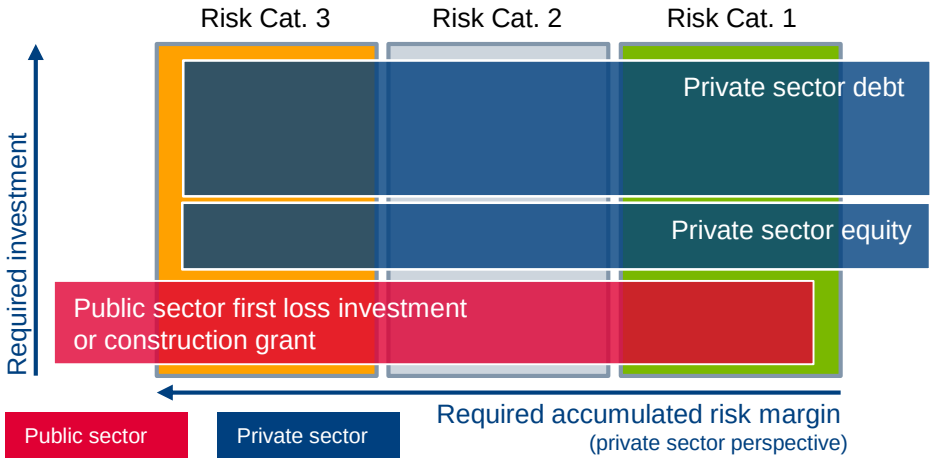
The GET FiT concept demands a cost effective deployment of public subsidies, i.e. mitigation of risks in category 3 by the public sector. This results in a vertical slicing of risks. After risk allocation the FiT should be set at a level making investments for the private sector attractive, i.e. financially viable.

We believe that once such risk mitigation instruments are in place and once a decent pipeline exists, the private financing sector is in a position to cover required debt and equity investments.

In case of the GET FiT pilot the guarantees might only be available for lenders (not shown in the chart below), i.e. they will only have an indirect effect for private sector equity investors.

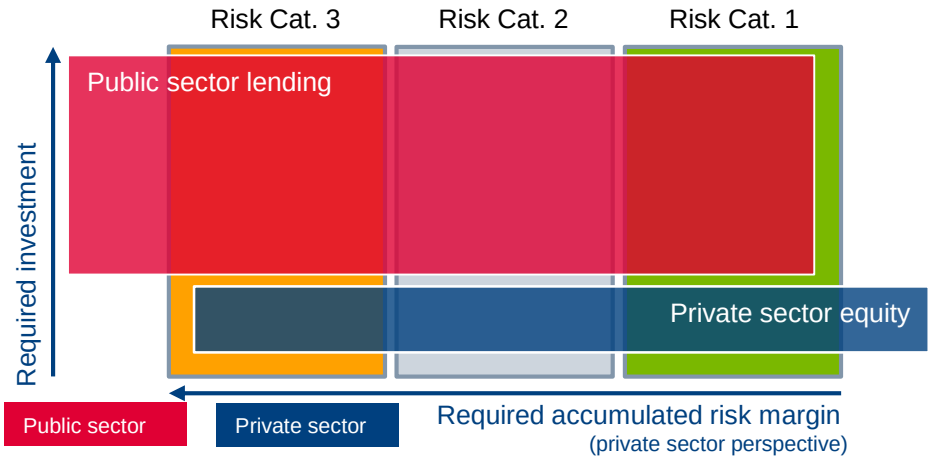


In contrast to the vertical slicing in GET FiT (chart above), construction grants or first loss investments by the public sector represent horizontal slicing (chart below), i.e. the public sector absorbs the initial losses in all risk categories. These instruments are extremely powerful in very young markets without track record and extremely high perceived risks for the private sector. Concerns relate to the scalability of these instruments.

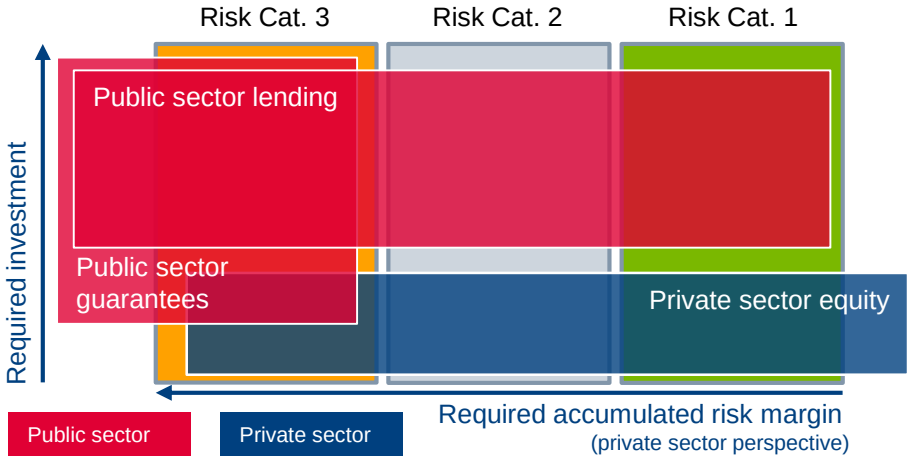


Particularly in markets with a weak commercial lending sector as well as a missing tradition in long term finance, concessional finance (and equity-co-investments) by Development Financial Institutions / International Financial Institutions (DFIs/IFIs) is common (chart below). In this case only the equity component (or at least parts of it) is covered by private sector investors. As the involvement of public sector institutions often has a default avoidance-effect a

significant involvement of DFIs/IFIs in financing could be seen as indirect risk mitigation also for first loss private sector investments.



As the GET FiT pilot does not exclude projects that benefit from DFI/IFI lending and depending on additional assessment of World Bank this could result in a limited potential for guarantees and/or an "oversubsidisation" of the public sector, i.e. a smart risk allocation only between various public sector stakeholders (chart below).

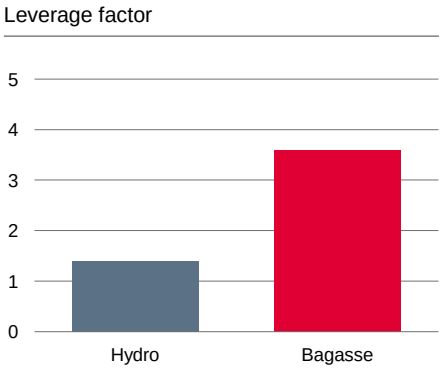


11. Impact of GET FiT 3: Leverage factors, burden sharing and abatement costs

Among others, the following Key Performance Indicators (KPIs) have been assessed during the preparation of the GET FiT pilot. To derive indicative figures these indicators have been calculated based on a hypothetical portfolio and are based on educated assumptions on investment costs and capacity factors.

For illustration purposes we show the KPIs for two specific projects in hydro and biomass. As the KPIs depend on specific cost and output assumptions these results can vary from the target KPIs for the portfolio as announced.

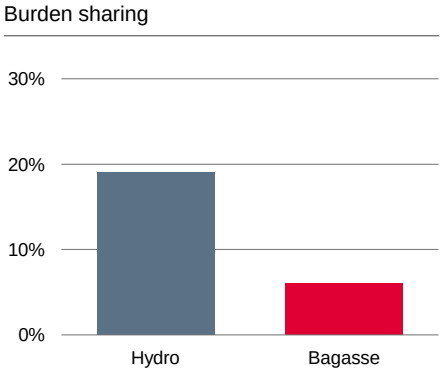
Leverage factor



Source: own calculations: Kreibiehl, Miltner

- The leverage factor has been defined as the relation between total investments and the NPV of donor money required to top-up the existing FiT (at a 2% discount rate). For the total investments no differentiation will be made for private sector investments on the one hand and DFIs/IFIs investments on the other hand.
- In particular in structures with a horizontal risk slicing, for example structured funds like the Global Climate Partnership Fund, the leverage factor defines the relation between public and private investment capital. Targeted leverage factors are likely to be higher as these programmes can usually only invest in projects which are close to financial viability. GET FiT, however, helps to create such financial viability.
- The actual portfolio leverage factor of the GET FiT portfolio will depend on the relative mix of technologies as well as capacity factors and investment costs.

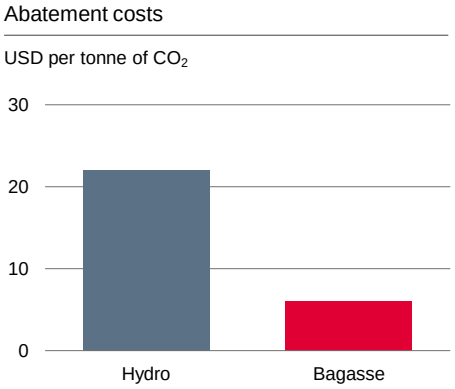
Burden sharing



Source: own calculations: Kreibiehl, Miltner

- The burden sharing defines the ratio between donor contributions and local contribution, i.e. the share of international donor support in total revenues to the projects. We apply a consistent discount rate of 2% for both components.
- For both technologies the local component, i.e. the tariff paid by UETCL and indirectly by the Ugandan ratepayers remains the dominating part. This provides an optimistic outlook with regard to the sustainability of GET FiT.
- After the launch of GET FiT ERA has already demonstrated its strong commitment and has slightly increased base FiTs resulting in lower than expected top-up requirements.

Abatement



Source: own calculations: Kreibiehl, Miltner

- Abatement costs have been calculated on the basis of a 682 grams / kilowatt hour (g/kWh) baseline, i.e. assuming that GET FiT will replace/avoid thermal emergency power generation. Emission reductions have not been discounted for this metric and are therefore not comparable with the CDM equivalents shown below.
- This indicator does not reflect abatement cost compared to a business-as-usual scenario as for example used in McKinsey abatement curves.

12. Impact of GET FiT 4: Enabling environment

Private sector activity in new markets is generally burdened by significant opportunity costs. Developers, construction companies, investors and financers are not familiar with these markets, its specifics and procedures. For example a developer needs to understand permission and licensing processes, investors/financers need to understand the specifics of the power purchase agreement. A limited track record reduces transparency and predictability of processes. Consequently, projects in new markets often result in higher development costs. Investing in new markets only makes sense from a commercial perspective if – at least in the mid/long term – the business in the new markets is more or equally attractive (or the only option to grow) than in existing markets. Otherwise the opportunity costs would hinder an allocation of resources to new markets.

With initial due diligence costs related to new markets being a major driver, the visibility of the future project pipeline becomes extremely important. If a financial institution believes in mid-term RE targets of a government and its continued support for private sector investments, it will be more easily convinced to make the “investment” of getting familiar with a new power purchase agreement and developer community.

GET FiT will support approx. 125 MW of RE. Thereafter financial viability might already be given at current FiT levels. Otherwise the government is expected to increase FiTs. Taking into account the relatively low incremental costs of RE compared to the current average generation costs, the economic viability of RE as well as the limited potential for further large-scale power plants, the visibility for medium scale RE projects is relatively high.

The first round of calls for proposals attracted a significant number of applications with a high number of different stakeholders. In particular for hydro projects, the development was initiated prior to the announcement of GET FiT (and even leakage of GET FiT plans). This success should therefore not been accounted for GET FiT but rather the continued work of ERA and also donor institutions. We, however, believe that the strong interest from financers/ investors is at least partially driven by the GET FiT efforts. Also, the development activity in more early stage projects has increased according to ERA.

The monitoring of the continued interest of the private sector in medium scale RE projects in Uganda will reveal the power of Uganda’s sector strategy and the impact of GET FiT to help private sector stakeholders to overcome the initial barriers of a relatively new market.

13. GET FiT private sector financing – a question of priority

The original concept stated that private sector investors and financers will act independently and pro-actively once they see a strong and transparent regulatory framework with an attractive pipeline of projects in place. The visibility of mid-to-long term RE targets decreases the opportunity costs for financing institutions, e.g. initial due diligence costs related to a new technology, a new market or a new transaction structure.

In Uganda – as in most African markets – there is no tradition of long-term financing by commercial banks. Their traditional business in renewables is primarily focused on working capital finance. Available tenors for long term financing, if available, do not exceed 5-7 years. Ring-fenced project financing transactions are rare. For international investors, participation in medium scale renewable energy investments in new markets can be unattractive taking into account high transaction costs, small transaction sizes and limited options to bundle individual project finance transactions in a fund vehicle to overcome this barrier.

Therefore, in the context of the implementation of the GET FiT pilot, the creation of a dedicated fund vehicle (offering debt and equity) was discussed to accelerate the deployment of private sector capital and to overcome the described barriers. The set-up of a dedicated fund vehicle and respective marketing for the capitalisation of the fund, however, require decent visibility of transactions to be financed by the fund. “Blindpool” investments in particular in a specific market with a limited pipeline, are hardly ever accepted by investors as the risk, that committed money cannot be invested and consequently will not yield any return, is perceived to be too high.

During the preparation and negotiation of the GET FiT financing proposal, donors stressed that they did not want to grant any kind of exclusivity to a dedicated GET FiT fund vehicle and the private sector, i.e. private sector arms of DFIs could invest in GET FiT supported projects. Deutsche Bank has therefore decided to not set up a dedicated fund vehicle. DFIs/IFIs face lower opportunity costs, are more familiar with project financing transactions in new markets, face less internal capacity constraints and can start transaction due diligence earlier as sunk costs are more accepted in their business model. Given their higher level of familiarity with new markets they usually can offer more attractive terms and conditions.

As in developed countries, commercial banks tend to come in at a time when the transaction structure and a clear risk profile is determined. At the time of the GET FiT launch there was still a high level of uncertainty with regard to the PPA termination clause for projects below 10 MW as well as the general availability of PRG guarantees.

Based on discussions with project sponsors applying for GET FiT support we would like to highlight the following observations:

— Remaining financing gaps for the initial projects are small, i.e. the assumption that financing institutions will come in as soon as a stable regulatory framework has been built, has been verified. Even if the assessment is based on flower letters only, we see only a limited risk that actual financial closing cannot be achieved if GET FiT instruments will be committed as planned. This is a significant success!

— Private sector equity dominates the portfolio with a good mix of private equity firms, local and international investors deploying capital. A significant component of South-South investments underpins the global trends in climate finance.

— The majority of debt financing will be provided by IFIs/DFIs. They have accepted a higher level of uncertainty when starting the dialogue with the private sector developers. As mentioned above we do not expect that private sector financers can come in by offering cheaper terms.

— While IFI/DFI involvement can add tremendous value by offering sub-ordinated or longer term debt, the risk of crowding out the commercial financing sector is high in case IFIs/DFIs do not see it as a priority to involve a minimum amount of private sector money. As IFIs/DFIs often act as lead arranger of debt packages, they also reduce the (non-balance sheet related) fee potential for commercial banks.

— We have observed a high level of professionalism at three major commercial banks with a strong footprint in Uganda once the regional project financing teams have become involved. Lacking capacity within financing institutions is more an issue of internal allocation of resources. This allocation is again driven by opportunity cost considerations and commercially rationally acting banks: Experts are allocated to the markets and segments with the most promising and commercially attractive pipeline; new experts are hired as soon as a significant market potential exists. Their feedback with regard to the new risk-reward profile has been encouraging.

— The appetite/willingness of commercial banks to absorb the significant hydrological risk in many projects has not been tested. Many projects lack long-term, reliable and site specific hydro data making output estimates more vague. While most of the projects remain in a position to cover debt repayments also in “-20% hydrology scenario” GET FiT has not yet proven the ability of the private sector to absorb this risk.

GET FiT has so far been a significant success with regard to private sector development activity and equity investments. To achieve the target of a broader private sector participation in debt financing – if this is seen as a priority by donors – it will be crucial to give private sector lenders a "fair chance" to participate at their terms. This, however, also requires the acceptance of higher interest rates, potentially shorter debt tenors and slightly longer lead times. Project sponsors and DFIs/IFIs would need to be incentivised to involve private sector lenders. This could be achieved with stick or carrot – a minimum private sector financing component as eligibility criteria or additional financial incentives in case of a private sector financing.

It has, however, been acknowledged that a rapid realisation of projects as seems likely now would have most likely not been possible with a higher private sector participation in lending (at higher costs).

One of the biggest differences between the GET FiT concept and the GET FiT pilot could be seen in the higher priority on fast realisation of projects over crowding in of private sector investors. This appears reasonable taking into account the massive challenge Uganda faces to avoid load shedding and to establish a reliable energy supply.

14. Additional aspects requiring further discussions and analysis

GET FiT and the CDM – From the use of economic instrument to investment support

Given the involvement of climate donor money and to avoid double-counting of carbon abatement the eligibility criteria of GET FiT state that project sponsors are not allowed to sell carbon credits generated by their GET FiT project to the compliance market but are entitled to cancel or sell those to the voluntary market.

With the carbon market being regarded as a major instrument to internalise external costs and make climate investments financially viable / create a market for climate investments, this decision appears contradicting. This becomes even more obvious seeing significant activities in Uganda to prepare a Programme of Activities and easing the access to carbon markets for small and medium scale projects.

Given the rather complicated, expensive and lengthy registration processes we believe that the FiT top-up is the easier instrument to facilitate a rapid deployment of capital for RE projects. Assuming the top-up replacing revenues from a carbon market the tables below highlight the implied certificate price of the top-up in the two possible CDM scenarios:

FiT top-up	1 USD cents/kWh	2 USD cents/kWh
Equivalent CER price in a 1*10 years scenario	29.6 USD/t	59.0 USD/t
Equivalent CER price in a 3*7 years scenario	14.9 USD/t	29.6 USD/t

Note: Calculations based on a model for a 15MW hydro project, a baseline of 682g/kWh (as chosen for the abatement cost calculation), registration costs of 65k USD and yearly verification costs of 10k USD. CER payments were expected to come in 8 months after FYend.

This analysis underpins that top-ups could also be seen as a replacement of an efficient and functioning carbon market and consequently a move from an economic instrument towards investment support through instruments such as

grants. With CERs currently trading significantly below the initially targeted levels, the carbon market would have not been sufficient to close the gap between base FiTs and LCOEs. Also, market volatility, risks related to the future baseline and resulting limited visibility of revenues would have most likely increased financing concerns even if current CER price levels would have been at equivalent levels to the top-up. We believe that even at implied certificate prices, lenders would not have increased the debt financing volume based on additional revenues from certificates. We are, however, confident that they will do it, based on additional revenues from the GET FiT top-up.

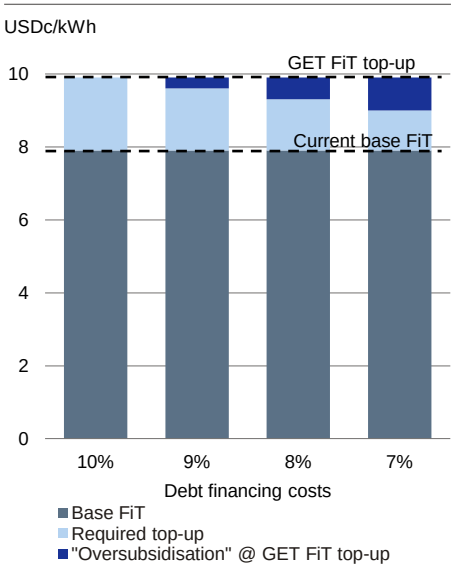
Carbon markets should, however, be the mid-to-long-term alternative to top-ups. Against this background we welcome the decision to allow IPPs to tap the voluntary carbon markets and hope that voluntary market price levels are attractive for developers to go through the registration processes.

Cost efficient combination of instruments

World Bank PRG cannot provide a framework commitment for GET FiT projects but will decide on an individual project level. While the World Bank has indicated strong interest and has initiated the internal decision making process, the (timely) availability of PRG guarantees for GET FiT is not yet given. The timeline for preparation of the World Bank guarantee programme will be driven by readiness of initial projects, as World Bank approvals will be for supporting specific projects. The World Bank and top-up donors have agreed an aligned due diligence process for the commitment the support mechanisms only to a certain extent. This increases transaction costs for developers as well as perceived risks for financing banks. Commercial banks may not initiate their due diligence based on a top-up commitment only.

The smart risk allocation, i.e. the allocation of regulatory and off-taker risk to the public sector, and the resulting cost-efficient use of donor money is one cornerstone of the GET FiT concept. As decisions by the GET FiT Investment Committee for the top-up and World Bank decision for the guarantees are not fully aligned, the additionality of the guarantees needs to be carefully assessed. Also, the power of the combination might be limited in case of a strong DFI/IFI involvement in debt financing. This should, however, not lead to the conclusion that the guarantees are not required to attract the private financing sector. We continue to believe that a vertical slicing of risks is more appropriate, efficient and scalable than a horizontal slicing in markets which have already developed some kind of track record.

Levelised Cost of Energy



Note: Calculations based on exemplary hydro project >10 MW, debt payback assumes 15 years tenor. Initial debt/equity split of 70/30.

Source: own calculations: Kreibiehl, Miltner

Appropriate FiT top-up levels

FiT schemes offer revenues per kWh without taking project specific cost assumptions into account. The latter, however, might vary significantly, given accessibility of sites, resource availability, e.g. hydrological data and/or distance to the next grid connection point. Consequently, the LCOE and the gap to the current FiT varies. As determining the “correct” FiT levels, the determination of the “correct” FiT top-up is more of an art than a science.

While we generally do not worry about the effect of different profitability levels of projects as a result of a fixed FiT per technology/project size we believe that the impact private sector versus DFI/IFI financing requires decent monitoring. The chart on the left highlights the impact of financing costs on levelised cost of electricity and required FiT top-ups for an exemplary hydro project. Assuming that DFIs or public-private partnership funds – even without involving concessional financing and interest rate subsidies – can price approx. 150-250 bps

below commercial banks the impact of DFI lending across the portfolio is not negligible.

The required FiT top up in our exemplary hydro project would be reduced to 50% assuming average interest rates of 7%. It, however, needs to be noted that the sensitivity on initial investment costs is much stronger.

In order to avoid discussions about oversubsidisation, we believe that it will be crucial to demonstrate that the generous assumptions on debt financing costs in the top-up calculation are not resulting in DFI financing increasing equity Internal Rate of Return (IRRs) but attract commercial debt financers as targeted. A minimum private sector debt financing component as eligibility criteria could be an appropriate instrument.

Frontloading of FiTs

The payment structure for the top-up chosen for the GET FiT pilot balances cost-effectiveness and level of results-orientation. We are confident that such structures could become an attractive entry point for “new kids on the (financing) block”.

In the past ERA selectively allowed a frontloading of the base FiT on a case-by-case basis as well. We understand that ERA in such cases calculated an average FiT/kWh but without taking into account the effect of the frontloading in terms of reduced financing costs for the IPP. Besides the faster payback of debt project sponsors/equity investors benefitted from a higher project return. The latter is in our view not necessary if the FiT is determined based on decent assumptions, in particular with regard to financing costs. We therefore recommend calculating frontloaded FiT payments based on an equal NPV basis and applying the projects average costs of capital.

Considering the application of frontloading mechanisms to a wider extent, it needs to be structured in a way to avoid moral hazard on the side of project investors, i.e. revenues in the later years of the project need to be significant enough to motivate the sponsor to operate the plant in an appropriate manner. It must be high enough to cover the operational costs and increase the return for equity investors on a yearly basis. The incremental change to the equity IRR must remain positive until year 20.

From a regulator’s perspective it will be crucial to minimise the impact on average generation costs in the first years. Besides the burden on end customer pricing and/or financial sustainability of the off-taker, we believe that an early negative reputation of REs as drivers for significant end customer price increases could have a tremendous negative impact. The international donor community should therefore consider the “financing” of frontloading efforts, for example by offering forfeiting instruments for project sponsors allowing host governments to pay and calculate with a stable 20year FiT.

USD based FiT

Uganda has decided in 2007 to implement a USD based FiT regime. To ensure cost reflectiveness of UGX end customer tariffs this requires an automatic tariff adjustment. Starting in 2013 end customer tariffs are adjusted on a quarterly basis to reflect, among others, UGX depreciation. While a USD based FiT increases the attractiveness of investment by international investors, it also allocates the currency risk to the “weakest” stakeholders, the end customer. Also, the impact on local currency investors needs to be evaluated.

Climate vs. energy play

GET FiT will support Uganda on its least-cost development path for the energy sector. As additional large scale hydro power (Karuma) is not likely to be ready for grid connection before 2018/19, increasing energy demand could only be covered by thermal generation (medium scale RE capacity is not expected to be financially viable based on current FiTs). The cost of thermal electricity generation/emergency power comes in significantly above LCOE of RE (neglecting the difference between LCOE/kWh supplied and LCOE/kWh produced). An increase of FiTs without international support would therefore be an economically viable decision. International support is therefore "only" required to kickstart the process and allow for a rapid FiT increase. The GET FiT monitoring and evaluation needs to assess the actual incremental costs of RE to define an appropriate level of burden sharing and the necessity of international climate finance grants. This appears even more important in case of an extension of GET FiT to other countries.

We continue to hear from many developing country regulators and energy sector stakeholders that they fear locking in relatively high generation costs for currently more expensive technologies like PV. While we believe that capacity caps are appropriate if an increase in one technology would significantly increase average generation costs, we believe that it makes sense to allow for some installations to build a technology track record. International financial support for the required FiT could be provided with the mechanisms applied in the GET FiT pilot.

GET FiT is not a "cure all"

We are confident that GET FiT can play a crucial role in developing Uganda's energy sector. GET FiT, however, is only an instrument to facilitate investments in medium-scale generation capacity. Investments for additional transmission lines and the upgrade of existing infrastructure, for example, will be required to reduce the high level of technical losses and will help to significantly reduce average generation costs per kWh delivered. An accelerated rural electrification also requires intelligent subsidies to foster decentralised end customer RE applications. GET FiT is therefore certainly not a "cure-all".

Silvia Kreibiehl (+49 69 154008-860, s.kreibiehl@fs.de)
Sabine Miltner (+1 202 626-7035, sabine.miltner@db.com)

Sources

GET FiT Program. Fulton, Kreibiehl et al. (2010). http://www.dbcca.com/dbcca/EN/investment-research/investment_research_2344.jsp

GET FiT Plus. Fulton, Kreibiehl et al. (2011). http://www.dbcca.com/dbcca/EN/investment-research/investment_research_2367.jsp

GET FiT feasibility study. Kreibiehl, Witte (2011). Not publicly available.

GET FiT financing proposal. Kreibiehl, Rieger, Witte (2012). Not publicly available.

GET FiT website: http://www.getfit-uganda.org

Emerging markets publications

- Capital markets in Sub-Saharan Africa ..... October 7, 2013
  Research Briefing
- CIS frontier countries:
  Economic and political prospects ..... July 16, 2013
  Current Issues
- Sub-Saharan Africa: A bright spot
  in spite of key challenges ..... July 15, 2013
  Current Issues
- Croatia facing challenges on the EU's doorstep ..... June 18, 2013
  Research Briefing
- ASEAN Economic Community (AEC):
  A potential game changer for ASEAN countries ..... June 14, 2013
  Current Issues
- German industry:
  China market growing moderately ..... April 10, 2013
  Research Briefing
- Emerging markets:
  Who is vulnerable to overheating? ..... March 12, 2013
  Research Briefing
- Two years of Arab Spring:
  Where are we now? What's next? ..... January 25, 2013
  Current Issues
- CIS Quarterly Monitor ..... January 22, 2013
  CIS Research, 4th Quarter 2012

Our publications can be accessed, free of charge, on our website www.dbresearch.com
You can also register there to receive our publications regularly by E-mail.

Ordering address for the print version:
Deutsche Bank Research
Marketing
60262 Frankfurt am Main
Fax: +49 69 910-31877
E-mail: marketing.dbr@db.com

Available faster by E-mail:
marketing.dbr@db.com